REMARKS/ARGUMENTS

The above-identified patent application has been reviewed in light of the Examiner's action dated June 16, 2005. Claims 1, 4, 6, 11, 15, 16, 17, 19, 26 and 29 have been amended without intending to abandon or to dedicate to the public any patentable subject matter. Claims 32 and 33 are new. Accordingly, claims 1-33 are now pending. As set forth more fully below, reconsideration and withdrawal of the objections to and rejections of the claims are respectfully requested.

Claim 16 stands rejected under 35 U.S.C. §112, second paragraph, as being incomplete for omitting essential structure regarding the cooperative relationships of elements. In the amendments set forth above, Claim 16 has been amended to remove the basis for this rejection. Accordingly, reconsideration and withdrawal of the rejection of Claim 16 under 35 U.S.C. §112, second paragraph are respectfully requested.

Claims 1, 8, 9, 13, 16-18, 22-27, 30 and 31 stand rejected under 35 U.S.C. §102 as being anticipated by U.S. Patent No. 6, 243, 170 to Ershov, and Claims 1-3 stand rejected under 35 U.S.C. §102 as being anticipated by U.S. Patent Application No. 2003/0011760 to Vaez-Iravani, et al. In addition, Claims 5, 7, 10, 12, 14 and 28 stand rejected under 35 U.S.C. §103 as being unpatentable over Ershov. In order for a rejection under 35 U.S.C. §102 to be proper, each and every element as set forth in a claim must be found, either expressly or inherently described, in a single prior art reference (MPEP §2131.) In order to establish a prima facie case of obviousness under §103, there must be some suggestion or motivation to modify the reference or to combine the reference teachings, there must be a reasonable expectation of success, and the prior art reference or references must teach or suggest all the claim limitations. (MPEP §2143). However, as set forth herein, each and every element of the claims cannot be found in the cited references, whether those references are considered alone or in combination.

The present invention is generally directed to sensing atmospheric trace gases. More particularly, the present invention provides a telescope optical system having an output that is magnified by less than one in at least a first plane with the effect that the field angle dependence of a filter receiving output from the telescope optical system is minimized, while allowing a field

angle dependence to remain in another plane. A detector receives the filtered light, which can be used to gather information regarding the concentration of atmospheric trace gases, including information comprising an elevation profile of the trace gas.

The Ershov reference is generally directed to a double pass etalon spectrometer. In particular, Ershov discusses a spectrometer used to measure the spectrum of a laser, such as a laser used during microlithography chip manufacturing. The Ershov spectrometer features a telescope that reduces the size of an incident laser beam. The light from the telescope is passed to a diffuser. Light scattered from the diffuser illuminates an etalon. (Ershov column 2, line 67-column 3, line 2; Figure 3.)

The Vaez-Iravani reference is generally directed to systems and methods for simultaneous or sequential multi-perspective specimen defect inspection. The system discussed by Vayez-Iravani includes an illumination system configured to direct a first beam of light to a surface of a specimen at an oblique angle of incidence and to direct a second beam of light to a surface of a specimen at a substantially normal angle. Light reflected by the specimen is then collected to obtain information on reflectance variation.

Claim 1 is directed to a field condensing sensor device. The device includes a telescope optical system having an input encompassing a first field of view and an output that is magnified by less than one in at least a first plane. The device additionally includes a filter positioned to receive light output by the telescope optical system wherein the filter features a number of passbands, wherein the light output by the telescope optical system within the first plane is incident on the filter within a first maximum angle, wherein the light output by the telescope optical system within a second plane that is orthogonal to the first plane is incident on the filter within a second maximum angle, and wherein the first maximum angle is less than the second maximum angle. In addition, Claim 1 recites a detector positioned to receive light passed by the filter. The Ershov reference does not describe each and every element of Claim 1. In particular, Ershov does not discuss a system in which light incident on a filter is constrained to within a first maximum angle in a first plane and a second maximum angle in a second plane, and in which the first and second maximum angles are different. Instead, Ershov describes a diffuser 34 through

which light from the telescope 32 is passed before a filter 25. (Ershov column 2, line 67 - column 3, line 2; Figure 3.) Accordingly, for at least these reasons, Claim 1 and the claims dependent therefrom are not anticipated by Ershov, and the rejections of Claims 1-3, 5, 7-10, 12-14 and 16 should be reconsidered and withdrawn.

The Vaez-Iravani reference also does not disclose each and every element of Claim 1. For example, Vaez-Iravani does not disclose a filter positioned to receive light output by the telescope optical system wherein the filter features a number of passbands. Indeed, the Vaez-Iravani reference does not describe any filtering of light output by a telescope optical system using a filter, much less a filter that has a number of passbands. In addition, the Vaez-Iravani reference does not discuss controlling the maximum angle of incidence of light with respect to the surface of a filter, in which the maximum angle in a first plane is different than the maximum angle in a second plane. Accordingly, for at least these reasons, Claims 1-3 are not anticipated by Vaez-Iravani, and the rejections of Claims 1-3 as anticipated by that reference should be reconsidered and withdrawn.

Claim 17 is generally directed to a method for remotely sensing atmospheric trace gas. The method includes collecting light from within a first field of view, magnifying the collected light in at least a first plane by a magnification factor that is less than one, and filtering the light magnified in at least the first plane in a filter having an optical cavity. In addition, amended Claim 17 recites that the filtering comprises substantially blocking light at wavelengths not corresponding to a selected number of spectral lines of absorption of an atmospheric trace gas. The Ershov reference does not disclose a method as recited by amended Claim 17. Instead, Ersbov discusses filtering diffused light originating from a laser in order to measure the bandwidth of that light with the precision needed for microlithography. Accordingly, for at least these reasons, Claim 17, 18 and 22-25 are not anticipated by Ershov, and rejections of these claims should be reconsidered and withdrawn.

Claim 26 is generally directed to a system for remotely sensing atmospheric trace gas. The system includes means for condensing a field angle of light collected from within a first field of view within at least a first claim, wherein an output of said means for condensing comprises

light having a condensed field angle within said at least a first plane. In addition, the system includes means for filtering the light having a condensed field angle, wherein the field angle is measured with respect to a surface of the means for filtering. The Ershov reference does not disclose a system as recited by amended Claim 26. For example, Ershov discusses the use of a diffuser between a telescope and an etalon. Moreover, Ershov does not discuss any means for condensing a field angle of light such that the field angle is condensed with respect to a surface of a means for filtering. Accordingly, for at least these reasons, Claims 26, 27 and 30-31 are not obvious over Ershov, and the rejections of those claims should be reconsidered and withdrawn. Similarly, Ershov does not teach, suggest or disclose each and every element as recited by Claim 26, and therefore the rejection of Claim 28 (which depends from Claim 26) as obvious should be reconsidered and withdrawn.

Applicants note with appreciation the Examiner's indication that Claims 4, 6, 11, 15, 19, 20, 21 and 29 would be allowable if rewritten in independent form, including all of the limitations of the base claim and any intervening claims. In the amendments set forth above, Claims 4, 6, 11, 15, 19 and 29 have been rewritten in independent form, thereby placing Claims 4, 6, 11, 15, 19, 20, 21, and 29 in condition for allowance.

New Claims 32 and 33 depend from Claim 1. Therefore, Claims 32 and 33 are allowable over the cited references for at least the same reasons that Claim 1 is allowable over those references.

Application No. 10/633,468

The application now appearing to be in form for allowance, early notification of same is respectfully requested. The Examiner is invited to contact the undersigned by telephone if doing so would expedite the resolution of this case.

Respectfully submitted,

SHERIDAN ROSS P.C.

By: _____

Bradley M. Knepper
Registration No. 44,189
1560 Broadway, Suite 1200
Denver, Colorado 80202-5141
(303) 863-9700

Date: September 15, 2005